

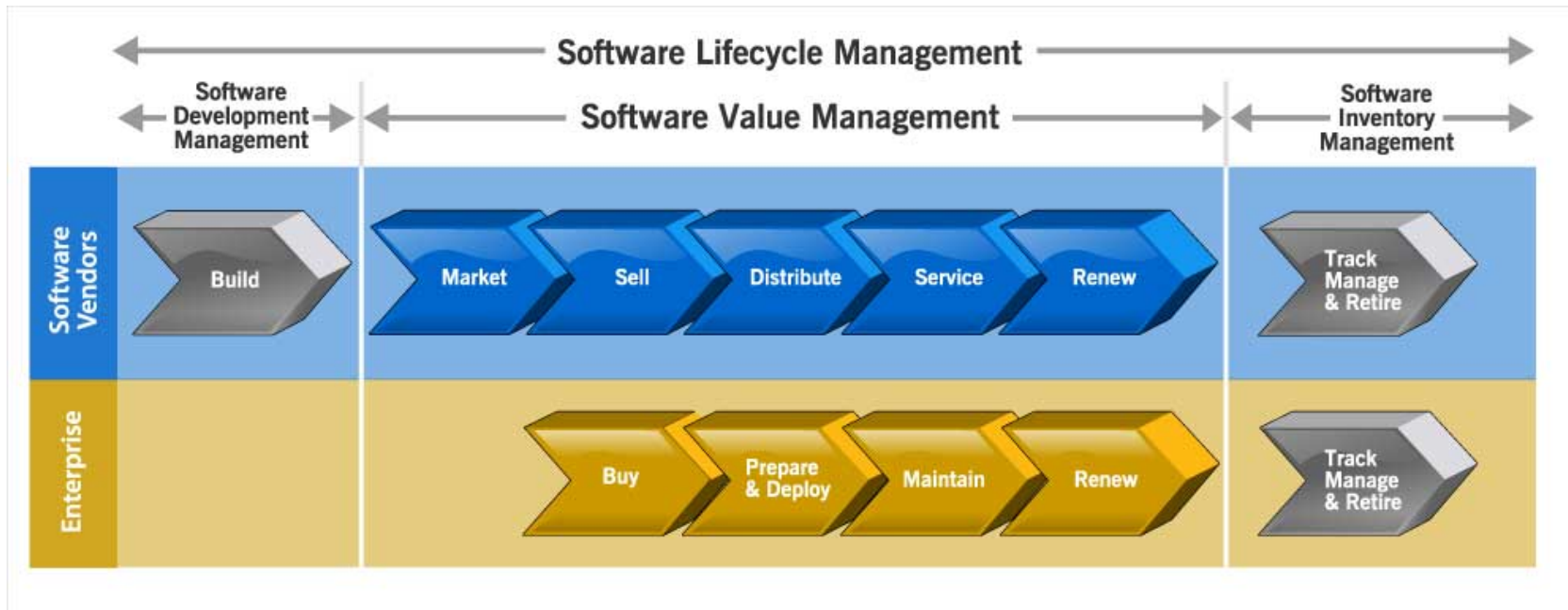


# Strategies for Application Server Deployment Using Multiplatform Installers

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# Why Care About Install?



Installation is part of the distribution and servicing aspect of the software lifecycle

“28% of application failures are directly linked to installation and configuration errors.”

IBM Autonomic Computing Research, 2004

# When the install is bad...

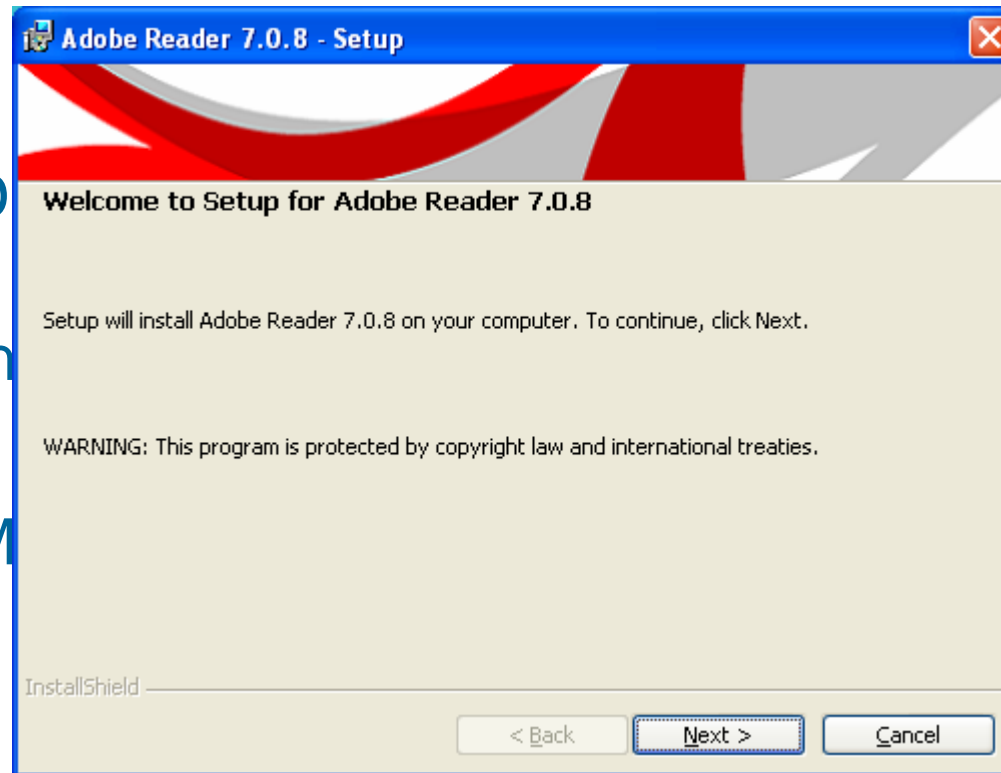
- The installation is a user's first impression of your software
- More tech support calls for you
- Your software is less maintainable by you & your customer
- More difficult for you to get fixes, revisions and updates to your software in your customers' hands

**Any experience with this?**

# Software Installation

Classically: Installation is ....

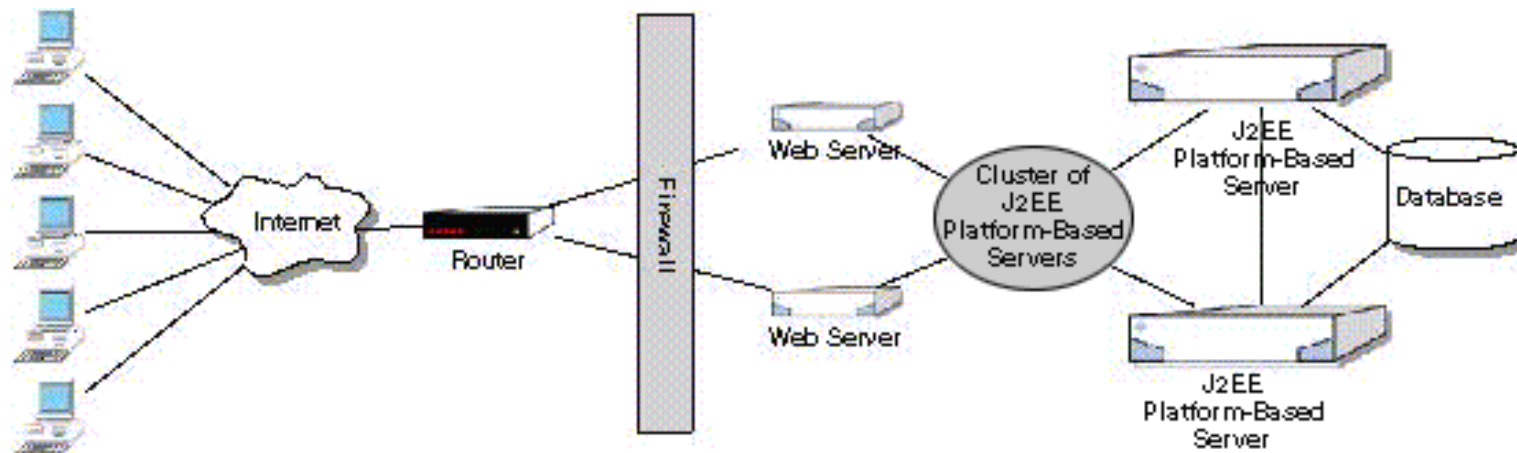
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e app

# The Problem

Enterprise software is multi-node, multi-user, multi-platform

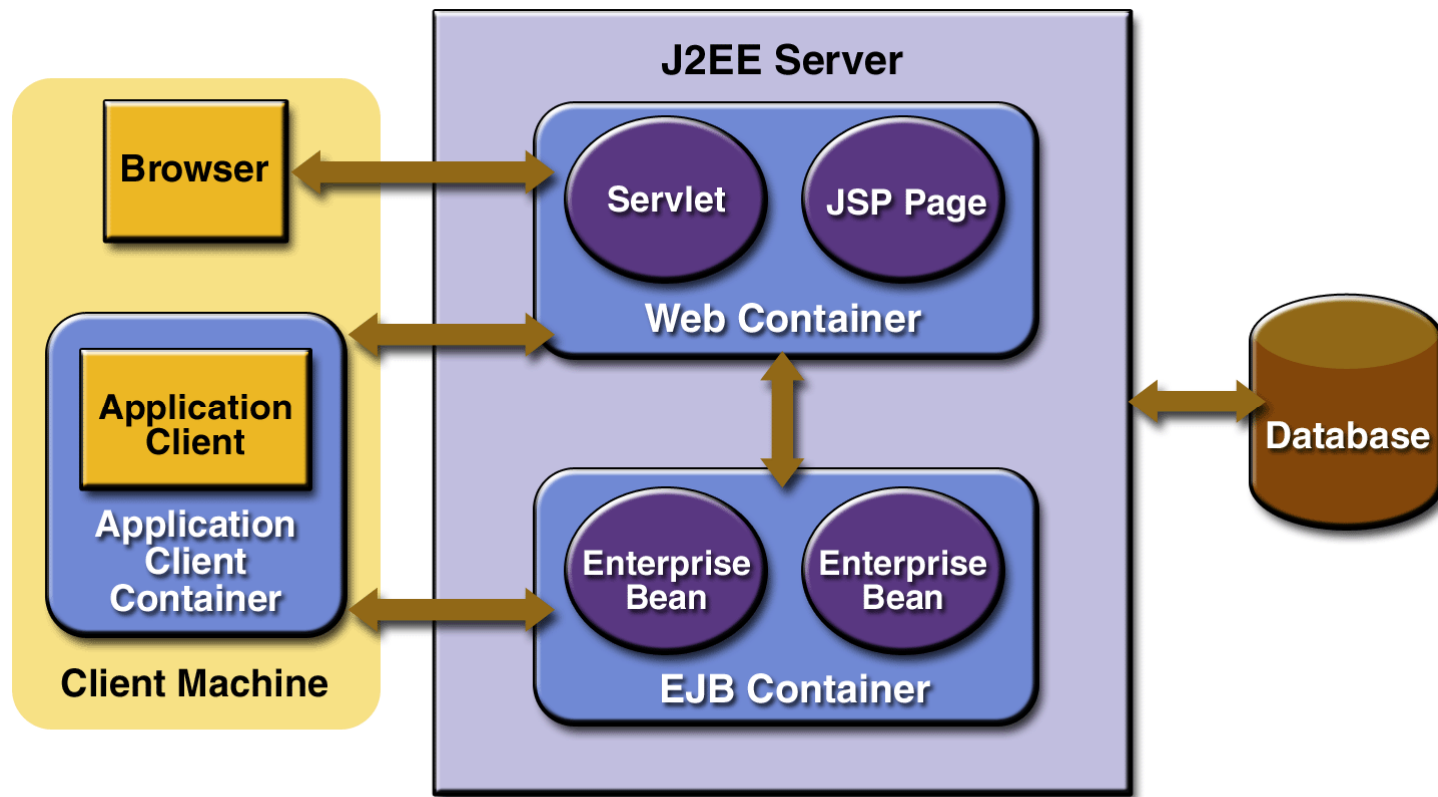


*High Availability for J2EE Platform-Based Applications*, Sun Microsystems, <http://java.sun.com>

# Enterprise Software

- J2EE
  - Servlet, EJB, and/or JSP
  - Relational Databases
  - Web services (SOAP, WSDL)
- .NET
  - COM+, ADO.NET, ASP.NET
  - MS SQL Server
  - Web services

# J2EE Enterprise Software



*The J2EE™ Tutorial*, Sun Microsystems, <http://java.sun.com>



“SOA will provide the basis for 80 percent of new development projects by the year 2008.”

Gartner Group

# Needs For Enterprise App Deployment

- Cross platform
- Multi-node
- Database configuration
- Many configuration parameters
  - Properties files, XML
  - Need validation of these parameters
- Services & daemons
- Patching & updating capabilities
- Others?

# The Homegrown Installer

```
oracle@oracle:/app/oracle/product/10.2.0/db_1/bin
File Edit View Terminal Go Help
[oracle@oracle bin]$ cd /app/oracle/product/10.2.0/db_1/bin
[oracle@oracle bin]$ export ORACLE_SID=wsrvr
[oracle@oracle bin]$ emctl start dbconsole
TZ set to US/Central
Oracle Enterprise Manager 10g Database Control Release 10.2.0.1.0
Copyright (c) 1996, 2005 Oracle Corporation. All rights reserved.
http://10.0.1.5:5500/em/console/aboutApplication
Starting Oracle Enterprise Manager 10g Database Control .....
ed.

Logs are generated in directory /app/oracle/product/10.2.0/db_1/10.0.1.5_w
ysman/log
[oracle@oracle bin]$ sqlplus

SQL*Plus: Release 10.2.0.1.0 - Production on Fri Oct 6 15:15:38 2006

Copyright (c) 1982, 2005, Oracle. All rights reserved.

Enter user-name: wsuser
Enter password:

Connected to:
Oracle Database 10g Release 10.2.0.1.0 - Production
```

```
C:\Documents and Settings\BrianLemberger\My Documents\Consulting\Customers\ldiom...
File Edit View Favorites Tools Help

- <Server port="%TOMCAT_SHUTDOWN_PORT%" shutdown="SHUTDOWN">
- <GlobalNamingResources>
  <!-- Used by Manager webapp -->
  <Resource name="UserDatabase" auth="Container"
    type="org.apache.catalina.UserDatabase" description="User database
    that can be updated and saved"
    factory="org.apache.catalina.users.MemoryUserDatabaseFactory"
    pathname="conf/tomcat-users.xml" />
  </GlobalNamingResources>
- <Service name="Catalina">
  <Connector port="%TOMCAT_PORT%" maxThreads="150"
    minSpareThreads="25" maxSpareThreads="75" enableLookups="false"
    redirectPort="8443" acceptCount="100" debug="0"
    connectionTimeout="20000" disableUploadTimeout="true" />
  <!-- This is here for compatibility only, not required -->
  <!--
    <Connector port="8009" protocol="AJP/1.3" />
  -->
- <Engine name="Catalina" defaultHost="localhost">
  <Realm className="org.apache.catalina.realm.UserDatabaseRealm"
    resourceName="UserDatabase" />
  <Host name="localhost" debug="0" appBase="webapps"
    unpackWARs="true" autoDeploy="true" xmlValidation="false"
    xmlNamespaceAware="false" />
  </Engine>
</Service>
```



install.tar

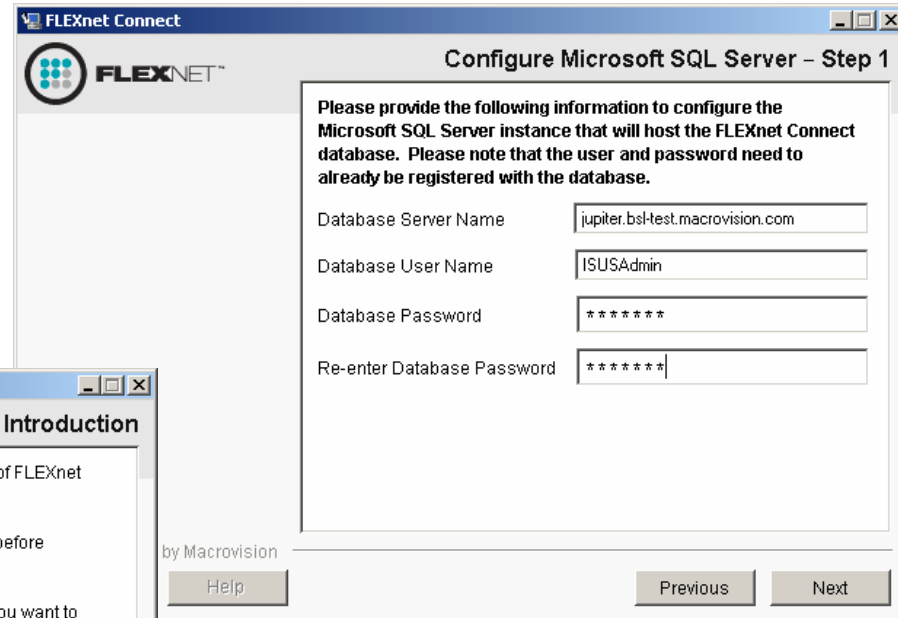
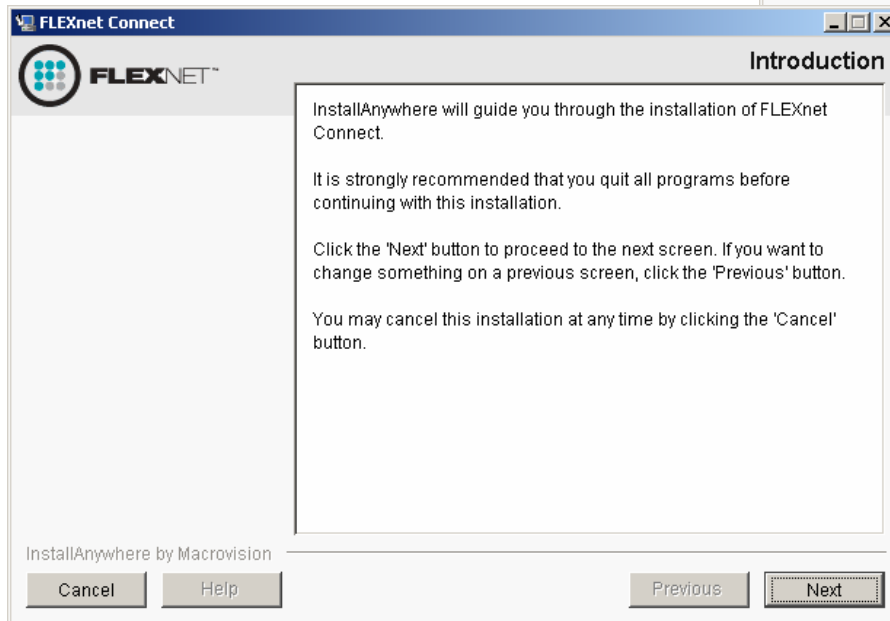


install\_guide.pdf

# Installation Authoring Tools



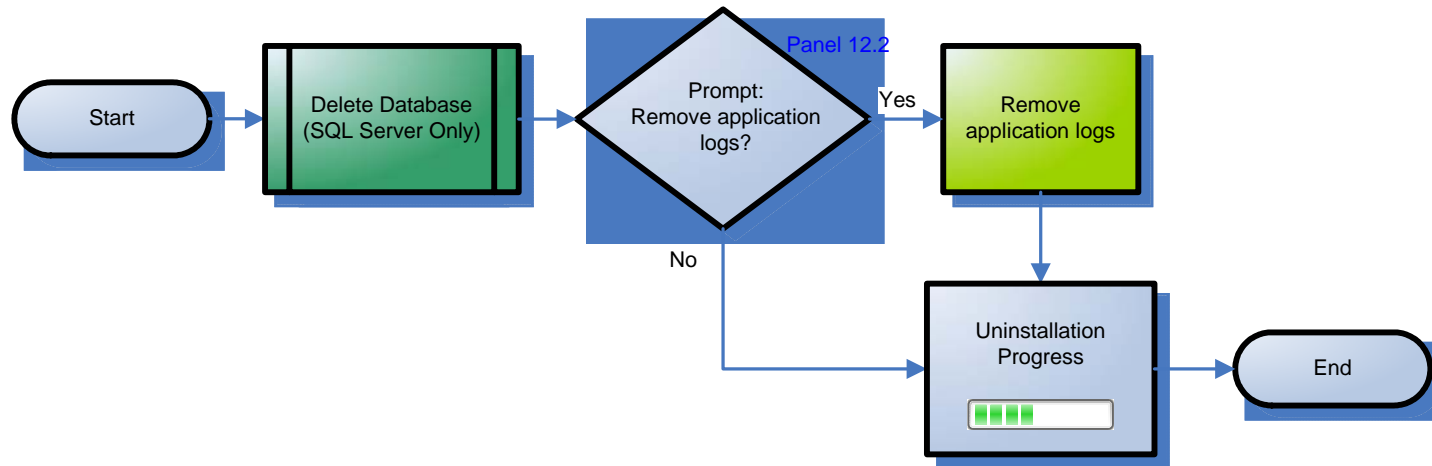
InstallAnywhere



# Best Practices

## 1. Plan a design phase for the installer

- Use Cases
- Design Specification
- UI Design



# Best Practices

## 2. Use a Component Based Architecture

- Divide installer functionality into independent components (database, J2EE, etc.)
- Allows for parallel development & unit testing
- Allows for future splitting into separate installers or amalgamation into suite installers

# Best Practices

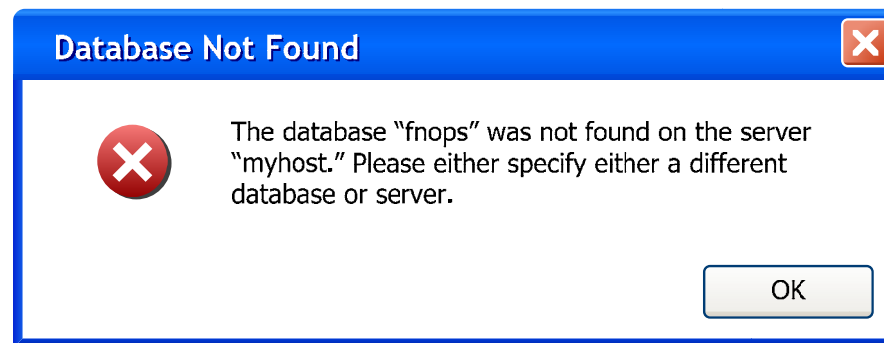
## 3. Handle installation to multiple nodes with single installation package

- Same .exe or .bin is run by user on multiple machines
- Basic: user selects what to install on particular node
- More advanced: installer “learns” what is already installed by querying the product database

# Best Practices

## 4. Provide validation of user input parameters

- Your software will work the first time if the user is stopped from mistakes during install
- Example: Use JDBC or ADO.NET code to verify database parameters *in the panel*





# Best Practices

## 5. Install & Upgrade the Database

- Setting up a database is roughly 50% of the effort in installing enterprise applications
- Do not shell out to `isql`, `sqlplus` or other command line utilities
- Instrument JDBC or ADO.NET code into installer
- Allow for cases where a DBA will create the database

# Best Practices

## 6. Detect or Install Application Server

- Depending on app, need to detect Tomcat, JBoss, WebSphere, WebObjects, etc.
- Need directories to install WAR & EAR files
- Modify XML/properties files using prompted values
- Basic: Rely on auto-deploy
- Advanced: Use each server's deployment APIs

# Best Practices

## 7. UI should provide simple & advanced views

- Installer may be used by many classes of users
- Should support a basic interface to install with most options
- Should support an advanced view to allow IT staff to fully configure the app
- Use “Installation Types” for this

# Best Practices

## 8. Use Automated Builds

- Check installation code and projects into source control
- Create build scripts (makefiles, Ant) to compile the app, assemble, and create installation packages
- Allows for frequent QA test cycles

# Summary

Designing and building bulletproof installations will greatly improve the chances for successful deployment of complex enterprise applications.

# Discussion